

ABSTRACT

The world is in the transition from Analog to Digital TV (TV), including Indonesia. Digital TV is capable of transmitting image and sound signals with sharper and clearer reception quality than Analog TV. Digital Video Terrestrial Broadcasting Second Generation (DVB-T2) is one of the Digital TV standards chosen in Indonesia because it provides services through the efficient utilization of the radio frequency spectrum in broadcasting. However, problem about the unknown parameters in DVB-T2 technology, such as the size of the Fast Fourier Transform (FFT), the length of the cyclic prefix (CP), block length, coding rate, and bandwidth are good and suitable to be applied in urban areas Indonesia.

This thesis studies about DVB-T2 technology performances using Orthogonal Frequency Division Multiplexing (OFDM) on DVB-T2 channels to serve various future DVB-T2 technology needs. This thesis calculates and evaluates the outage performances of Indonesia DVB-T2 channels, which are also validated using bit error rate (BER) and frame error rate (FER) parameters. The simulation is based on OFDM concept in the DVB-T2 standards with several cyclic prefix (CP) sizes and Binary Phase Shift Keying (BPSK) modulation.

The result of this thesis are evaluation result of DVB-T2 performances in Bandung and Jakarta city as well as evaluating potential parameters that can be optimized. This thesis shows the characteristics of OFDM on Indonesian urban DVB-T2 channels, achieved diversity order of outage performances, signal-to-noise-ratio (SNR) value at BER performances of 10^{-4} , number of paths obtained and existing theory Uncoded $R = 1$ compared with channel coding Repetition codes $R = 1/3$. This thesis also provides table of power analysis based on modulation for OFDM which is expected to be an able to help design hardware for mass production of the Set Top Box (STB) receiver system or Indonesian Digital TV aircraft.

Keywords: Digital TV DVB-T2, Radio Frequency (RF) Profile, Channel Model, OFDM.